NEVADA COOPERATIVE SNOW SURVEYS

Part II. Humboldt River Basins, Eastern and Southern Nevada, and Nevada National Wildlife Refuges.

Seasonal Snow Survey and Kindred Data, with
Forecast of Streamflow
April 1, 1945

Issued in cooperation with the Nevada Agricultural Experiment Station, United States Division of Irrigation of the Soil Conservation Service, Forest Service, Bureau of Reclamation, Weather Bureau, Geological Survey, Fish and Wildlife Service, Humboldt River Water Users, Nevada State Engineer, Elko-Lamoille Power Company, and Wells Power Company.

Nevada Agricultural Experiment Station

Reno, Nevada

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FORECAST SUMMARY

Heavy precipitation and low temperature during March have increased the snow cover throughout Nevada with few exceptions far beyond that of any other year of record since 1935.

The snow survey of April 1 indicates a seasonal percentage of 115.4 for the Upper Humboldt and 127.0 for the Little Humboldt-Quinn. For the runoff at Palisade the water-table level March 1 indicates a March-September flow of 125.0 percent.

There are no normals of snow or runoff in the other watersheds, but on the basis of 1944, Steptoe Valley has a percentage of 101.9, Baker Creek 119.2, and Mount Charleston 157.6. Reese River's precipitation November-March indicates a runoff of 125%.

The Wildlife Refuges have an April 1 snow cover far surpassing any other since 1941 except at Hagar Canyon in 1942 when the snow cover was only 0.1 in. (water equivalent) in excess.

I. HUMBOLDT BASIN

FORECAST DATA FOR PRESENT SEASON

1944-45

Percent of Normal

1. Snow Cover and Precipitation

Snow Cover March 1	High-level	Low-level	Precip. Nov-Mch.
Upper Humboldt	82.8	79.2?	109.0
Little Humboldt	94.9		153.4
Reese River			103.3

Snow Cover April 1 Pct. of March 1 Normal	High-level	Low-level	Precip. March
Upper Humboldt	115.4	82.2	152.4
North Feeders	100.3	61.0	160.5
South Feeders	130.6	103.4	144.4
Lamoille	113.6		162.1
Lower Humboldt			
Little Humboldt-Quinn	127.4		212.2
Reese River			186.2

2. Temperature during March

	Temp. Dept.	Mean temp. above freezing
Upper Humboldt Elko	-4.8°F	12.6°F
Lower Humboldt Winnemucca	-2.2	17.3
Reese River Austin	-4.1	11.7

3. Snow Cover Change in March

	Normal Key Courses only (1935-1941) in. (Water equiv. in.)	1945 General Average (Water equiv. in.)	Gain or Loss over Percentage Snow Survey Mar. 1 High-Level	Low-Level
Upper Humboldt North Feeders	-0.01	+2.9	+22.7	+6.0
South Feeders	+1.7	+5.2	+42.6	+0.1
Lamoille	+1.7	+5.3	+31.5	
Little Humboldt-Quinn River		+2.1	+32.5	
Reese River		+3.9		

4. March Runoff

	Normal	1945 Acre Feet	Percentage
Humboldt at Palisade	32,600 A.F.	44,500	136.5
Martin Creek near Paradise Valley	3,610	2,550	70.6

5. Well Measurements - To Water

March 1

Upper Humboldt Valley (Average 7 wells)		Lamoille Valley (Average 5 wells)	
Normal	1945	Normal	1945
11.62 ft.	11.09 ft.	4.24 ft.	3.30 ft.

Forecast

Owing to heavy precipitation during March the forecast of streamflow in the Humboldt Basin can now be increased a full 30 percent of normal for March-July. Furthermore, the low temperature during the month has preserved the snow cover for more efficient use later in the season.

1. Upper Humboldt

The average snow cover of the Upper Humboldt is now 115.4 percent, but the cover of the North Feeders is only 100.3 percent while that of the South Feeders is 130.6 percent. This should cause a divergence of 30 percent in favor of the south and late-flowing feeders.

The snow cover in the Lamoille Basin is 113.6 percent and on the South Fork 137.9 percent.

All feeders except probably Marys River should flow in general accord with their snow cover, but the latter and the main Humboldt at Palisade should flow fully 10 to 15 percent of normal more because of the continuation of the water table in the alluvial valleys above normal.

Forecast of Probable Flow

Because of the uncertainty of the weight to be given distorting factors, such as water table and precipitation during runoff, only the probable flow is forecasted. The weather factors for March indicate a flow above rather than below the forecasted.

	Normal Flow Acre feet	Probable Flow for period indicated by the normal Percent	Acre feet
Humboldt River at Palisade (Mar.-July)	215,000 (Median 203,300)	125.0	268,750
" (Mar.-Sept.)	220,700 (Median 207,200)	"	275,875
Lamoille Creek at Power House (April-July)	22,800	115.4	26,300
South Fork Humboldt River at Bolton Ranch (Mar.-July)	81,910 (Median 73,460)	137.9	112,950
" (Mar.-Sept.	83,784 (Median 74,370)	"	115,500

2. Lower Humboldt

(a) Little Humboldt-Quinn River

The forecast of 127.4 percent of normal is based on the snow cover embracing Martin Creek and the North Fork of the Little Humboldt basins. The east fork of the Little Humboldt, however, is perhaps better represented by the snow cover of 122.1 percent at adjacent Susie-Maggie Creeks Basin and North Fork 98.6 percent.

Only the normal for Martin Creek is available.

	Normal Acre-feet	Probable Flow for period indicated Percent	Acre-feet
Martin Creek (near Paradise Valley) (March-July	20,320 (New normal)	127.4	25,880
(March-September)	21,440	"	27,315

(b) Reese River

No snow cover normal for the Reese River Basin nor of stream flow is available, but the snow cover for April 1 is 15.6 times as great as for this date last year. The total amount, however, is small.

The precipitation of 186.2 percent for March and 125.0 percent for Nov.-March indicate a runoff comparable with the Little Humboldt Basin.

APRIL 1 SNOW SURVEY DATA
1. UPPER HUMBOLDT BASIN

Temperature departure March, Elko (5,077 ft.) -4.8°F (Mean 32.8°F)
Mean temperature above freezing 12.6 °F (Normal 10.1°F)

	Elevation feet	Date	Snow depth inches	Density percent	Water equivalent inches	Normal water equivalent Mar. 1	Percentage of Mar. 1 normal		Seasonal precip. and percentage of normal U.S.W.B. stations March
Northern Feeders									
Marys River									
Bear Creek	8,100	Apr. 4	77.4	27.0	20.9	20.6	101.5	99.4	Jarbidge-Mala Vista
Fox Creek	6,900	Apr. 4	38.3	28.2	10.8	11.1	97.3		(6,100-5,585 ft.)
Marys River	8,000			Not taken					2.94 in.
Marys River-North Fork									
Big Bend	6,800	Apr. 4	40.4	30.0	12.1	12.1	100.0	102.9	
Gold Creek R.S.	6,600	Apr. 4	28.2	32.3	9.1	8.6	105.8		
North Fork									
Jack Creek	7,800	Apr. 5	43.6	35.8	15.6	11.6	134.4		North Fork-Tuscarora-
Jack Creek	7,000	Apr. 5	26.2	19.5	5.1	7.3	69.9	98.6	Owyhee (6,500-5,400
Rodeo Flat	7,000	Apr. 3	40.8	33.8	13.8	14.3	96.5		ft.) Norm. 1.42 in.
Fry Canyon	6,800	Apr. 3	39.2	32.4	12.7	13.6	93.4		2.28 in; 160.5%
Tremewan Ranch	5,600	Apr. 3	No snow			4.0			
Susie-Maggie Creeks									
Taylor Canyon	5,200	Apr. 4	24.7	38.1	9.4	7.7	122.1		
AVERAGE OF NORTHERN FEEDERS						Higher Levels	100.3		160.5%
						Lower Levels	61.0		

APRIL 1 SNOW SURVEY DATA
1. UPPER HUMBOLDT BASIN (Cont.)

	Elevation feet	Date	Snow depth inches	Density percent	Water equivalent inches	Normal equivalent March 1	Percentage March 1 Normal		Seasonal precipitation and percentage of normal at U.S.W.B. Stations March
Southern Feeders									
Trout-Starr-Secret Creeks									
Trout Creek	8,500					24.9			Arthur-Wells
Trout Creek	6,900					8.4			(6,500-5,633 ft.)
									Normal 1.66 in.
Dorsey Basin	8,100	Apr. 5	69.2	30.6	21.2	14.7	144.2	124.7	
Dry Creek	6,500	Apr. 4	27.0	38.9	10.5	8.3	126.5		2.26 in; 136.1%
Ryan Ranch	5,775	Mar. 31	9.1	34.1	3.1	3.0	103.4		
Lamoille-Rabbit Creeks									
Lamoille Canyon	9,000	Apr. 5	77.1	30.5	23.5	24.1	97.5		Lamoille-Elko
Lamoille Canyon	9,000†	Apr. 6	74.0	34.5	25.5	27.4	93.1		(6,290-5,077 ft.)
Lamoille Canyon	8,500*							113.5	Normal 1.90 in.
Lamoille Canyon	8,100	Apr. 5	58.5	30.1	17.6	15.0	117.3		3.08 in; 162.1%
Lamoille Canyon	7,600	Apr. 5	49.8	30.1	15.0	12.8	117.2		
Lamoille Canyon	7,400	Apr. 4	51.0	34.1	17.4	12.2	142.6		

† Cross Course

* Covered by avalanche

APRIL 1 SNOW SURVEY DATA
1. UPPER HUMBOLDT BASIN (Cont.)

	Elevation feet	Date	Snow depth inches	Density percent	Water equivalent inches	Normal water equivalent March 1	Percentage of Mar. 1 normal		Seasonal precipitation and percentage of normal at U.S.W.B. March
Southern Feeders (Cont.)									
South Fork-Ruby Lake									
Corral Canyon	8,500	Apr. 5	81.3	33.6	27.3	14.5	188.3	137.9	Hylton-Ruby Lake (7,081-6,200 ft.)
Green Mountain	8,000	Apr. 4	61.9	30.0	18.6	17.3	107.5		
Harrison Pass No. 2	7,400	Apr. 1	34.4	31.7	10.9	7.8	118.0		Normal Hylton 1.83 in. 24.7; 135.0%
Harrison Pass No. 1	6,600	Apr. 1	24.3	31.3	7.6				
Hager Canyon	8,500	Apr. 3	73.9	31.7	23.4				Ruby Lake 1.47 in.
Cave Creek	7,000	Apr. 3	58.7	34.1	20.0				
AVERAGE OF SOUTHERN FEEDERS							Higher Levels	130.6* (Inc.)	144.4
							Lower Levels	103.4	
AVERAGE UPPER HUMBOLDT							Higher Levels	115.4	152.4
							Lower Levels	82.2	

*The average for the Southern Feeders is computed by weighting the three groups of stations representing South Fork, Lamoille Creek, and Starr Creek on the basis of 2, 1, and 1/2 representing their relative contributions to the flow of the main Humboldt.

APRIL 1 SNOW SURVEY DATA
11. LOWER HUMBOLDT BASIN

Temperature departure March Winnemucca (4,287 ft.) -2.2°F (Mean 37.8°F)
Mean temperature above freezing 17.8°F (Normal 10.4°F)

	Elevation feet	Date	Snow depth inches	Density percent	Water equivalent ins.	Normal water equivalent March 1	Percentage of Mar. 1 normal	Seasonal precip percentage of n at U. S. W. B. March
Rock Creek-Little Humboldt								
Midas	7,000	Apr. 4	26.8	38.1	10.2			Paradise Valle Orovada (4,650 ft.)
Lamance Creek	7,000	Apr. 4	26.6	33.8	9.0	12.6	71.4)	
Granite Peak	8,600	Apr. 5	52.0	30.6	15.9	13.6	116.9)	1.41 in. (Norm
Martin Creek R.S.	7,000	Mar. 27	34.5	29.9	10.3	7.9	130.4) 127.4	0.89 in.);
Upper Buckskin Mt.	8,200	Mar. 25	39.0	37.2	14.5	10.3	140.8)	158.4%
Lower Buckskin Mt.	6,800	Mar. 25	29.9	38.1	11.4	9.4	121.3)	
AVERAGE LITTLE HUMBOLDT BASIN							127.4*	212.2

Temperature departure March, Austin (6,594 ft.) -4.1°F (Mean 32.0°F)
Mean temperature above freezing 11.7°F (Normal 7.7°F)

Reese River Basin								
Big Creek								
Upper Big Creek	8,000	Apr.12	49.3	26.2	12.9			
Cabin Course (Middle)		Apr.12	31.8	30.8	9.8			Austin (6,594
Camp Ground (Lower)		Apr. 3	20.3	35.0	7.1			Normal 1.52 in
Upper Corral	8,500	Apr. 2	36.1	32.4	11.7			2.83; 186.2
Lower Corral	7,500	Apr. 2	19.0	39.5	7.5			

*No normal for Midas at head of Little Humboldt but snow cover at adjacent Susie-Maggie Creeks was 122.1% and North Fork 98.6%.

CHANGE IN SNOW COVER AT ALL STATIONS DURING MARCH 1945
(Inches Water)
1. UPPER HUMBOLDT BASIN

Temperature Departure Elko (5,077 ft.) -4.8°F (Mean 32.8°F); Mean temperature above freezing 12.6°F (Normal 10.1°F)

Northern Feeders

Marys River

	Bear Creek (8,100 ft.)	Fox Creek (6,900 ft.)	Marys River (8,000 ft.)	Big Bend (6,800 ft.)	Gold Creek R.S. (6,600 ft.)	Precipitation at Jarbidge-Mala Vista (6,100 - 5,585 ft.)
March 1	13.4	6.9		8.1	6.3	
April 1	20.9	10.8		12.1	9.1	2.94 in.
Gain or loss	+ 7.5	+3.9		+ 4.0	+2.8	

North Fork

	Jack Creek (7,800 ft.)	Jack Creek (7,000 ft.)	Rodeo Flat (7,000 ft.)	Fry Canyon (6,800 ft.)	Tremewan Ranch (5,600 ft.)	Precipitation at North Fork-Tuscarora-Owyhee (6,500-5,400 ft.) (Normal 1.42 in.)
March 1	10.7	6.6	10.0	8.6	2.2	
April 1	15.6	5.1	13.8	12.7	0	2.28 in.; 160.5%
Gain or loss	+4.9	-1.5	+3.8	+4.1	-2.2	

Susie-Maggie Creeks

	Taylor Canyon (5,200 ft.)
March 1	7.6
April 1	9.4
Gain or loss	+1.8

AVERAGE NORTHERN FEEDERS Gain or loss in snow cover +2.9 in.; precip. +0.86 in.; temp. dept. -4.8°F (Mean above freezing 12.6°F)

CHANGE IN SNOW COVER AT ALL STATIONS DURING MARCH 1945
(Inches water)

1. UPPER HUMBOLDT BASIN (Cont.)

Southern Feeders

Trout-Starr-Secret Creeks

	Trout Creek (8,500 ft.)	Trout Creek (6,900 ft.)	Dorsey Basin (8,100 ft.)	Dry Creek (6,500 ft.)	Ryan Ranch (5,775 ft.)	Precipitation at Arthur-Wells (6,500-5,633 ft.) Normal 1.66 in.
March 1	21.1	6.4	10.1	5.8	3.1	2.26 in.
April 1			21.0	10.5	3.1	
Gain or loss			+ 10.9	+ 4.7	0	

Lamoille-Rabbit Creeks

	Lamoille (9,000 ft.)	Lamoille (9,000 ft.)	Lamoille* (8,500 ft.)	Lamoille (8,100 ft.)	Lamoille (7,600 ft.)	Lamoille (7,400 ft.)	Precipitation at Lamoille-Elko (6,200-5,077 ft.) Normal 1.90 in.
March 1	22.1	19.1	Course covered by avalanche	12.4	10.3	10.5	3.08
April 1	25.5	25.5		17.6	15.2	17.3	
Gain or loss	+3.4	+ 6.4		+5.2	+4.9	+6.8	

South Fork-Ruby Lake

	Corral Canyon (8,500 ft.)	Green Mt. (8,000 ft.)	Harrison Pass #2 (7,400 ft.)	Harrison Pass #1 (6,600 ft.)	Hagar Can. (8,500 ft.)	Cave Creek (7,000 ft.)	Precip. at Hylton-Ruby Lake Normal 1.83
March 1	18.1	13.2	6.9	5.9	17.0	15.5	1.97
April 1	27.3	18.6	10.9	7.6	23.4	20.0	
Gain or loss	+9.2	+5.4	+4.0	+ 1.7	+6.4	+4.5	

AVERAGE SOUTHERN FEEDERS Gain or loss in snow cover +5.2 in.; Precip. +0.89 in.; Temp. dept. -4.8°F. (Mean above freezing 12.6°F)

Runoff from Upper Basin at Palisade during March 44,500 A.F. (Normal 32,600 A.F.) 136.5%

CHANGE IN SNOW COVER AT ALL STATIONS DURING MARCH 1945
(Inches water)

11. LOWER HUMBOLDT BASIN
Temperature Departure Winnemucca (4,287 ft.) -2.2°F (Mean 37.8°F)
Mean temperature above freezing 17.3°F (Normal 10.4°F)

Rock Creek-Little Humboldt

	Midas (7,000 ft.)
March 1	7.9
April 1	10.2
Gain or loss	+ 2.3

Little Humboldt Basin

	Lamance Creek (7,000 ft.)	Granite Peak (8,600 ft.)	Martin Creek R.S. (7,000 ft.)	Upper Buckskin (8,200 ft.)	Lower Buckskin (6,800 ft.)	Precip. at Paradise-Orovada (4,650-4,300 ft.) Normal 0.89 in.
March 1	9.6	11.4	6.6	14.2	8.8	
April 1	9.0	15.9	10.3	14.5	11.4	1.41 in.; 158.4%
Gain or loss	-.6	+4.5	+3.7	+0.3	+2.6	

AVERAGE LITTLE HUMBOLDT BASIN Gain or loss in snow cover +2.1 in.; precip. +1.10 in. Inc.; temp dept. -2.2
Mean above freezing 17.3

Martin Creek 2,550 A.F. (Normal 3,000 A.F.); 85.0%

Reese River Basin

Temperature departure Austin (6,594 ft.) -4.1°F (Mean 32.0°F)
Mean temperature above freezing 11.7°F (Normal 7.7°F)

	Upper Big Creek (8,000)	Big Creek Cabin	Big Creek Camp Ground	Reese River Upper Corral (8,500)	Reese River Lower Corral (7,500)	Precip. at Austin (6,594 ft.) Normal 1.52 in.
March 1	9.4	4.6	5.1	3.5	6.9	
April 1	12.9	9.8	7.1	11.7	7.5	2.83; 186.2%
Gain or loss	+3.5	+ 5.2	+ 2.0	+8.2	+ 0.6	

AVERAGE [illegible] IV [illegible] 1N. Gain or loss in snow cover +[illegible].9 in.; precip. +1.31 in.;

(Mean temperature above freezing 11.7°F)

No runoff records available.

Main Humboldt River

Precipitation stations only.

Precip. at Battle Mountain-Winnemucca-Rye Patch Dam-Lovelock (4,513-3,977 ft.). Normal 0.65 in. (except Rye Patch)
0.81 in.; 124.6%

Runoff Palisade 44,500 A.F. (Normal 32,600 A.F.); 136.5%
Storage in Pitt-Taylor Reservoirs 16,860 A.F.
Runoff Callahan Gaging Station near Imlay (abandoned)
Rye Patch Reservoir storage Apr. 1, 178,100 A.F. with release of 800 second feet. (Max. storage capacity 178,100 A.F.)

PAST RECORD 1942-1945 OF CHANGE IN WATER CONTENT OF SNOW COVER AT KEY STATIONS AT HIGHER LEVELS DURING MARCH (For 1935-1942 See Report for April 1, 1942)

	Northern Feeders Snow Cover				Southern Feeders									
	Fox Creek (6,900 ft.)	Big Bend (6,800 ft.)	Precipitation (U.S.W.B.) North Fork-Tuscarora-Owyhee (5,400-6,500 ft.)(Mar. Norm. 1.42 in.)		Lamoille (7,400 ft.)	Lamoille (7,600 ft.)	Lamoille (8,100ft.)	Lamoille (9,000 ft.)	Precipitation (U.S.W.B.) Lamoille (6,100ft.) (Mar. Norm. 2.63 in.)		Mean Temperature (Elko (5,077 ft.) Departure (Normal 37.6°F)	Mean Temp. above freezing (Norm. 10.1°F)	Snow Cover April 1 (Percent of March 1 norm.)	Runoff at Palisade for March: Percent of normal March runoff (Normal 32,600 A.F.)	Runoff at Palisade for March: Percent of normal March-July (Normal 215,000 A.F.)
			Total	Dept.					Tot.	Dept.					
AVERAGE FOR PERIOD 1935-1941	-0.2	-0.01	1.31	-0.11	+0.8	+0.8	+1.5	+3.6	2.04	-0.79	-0.5	9.3			
1942															
March 1	9.8	10.2			12.4	12.7	13.3	23.8							
April 1	8.5	10.4			13.1	13.7	14.8	28.9							
Gain or loss	-1.3	+ 0.2	0.46	-0.96	+ 0.7	+ 1.0	+ 1.5	+ 5.1	2.23	-0.60	- 2.7	7.0	83.9	191.6	39.1
1943															
March 1	9.6	16.3			11.7	12.0	13.7	31.6							
April 1		15.3			10.7	10.8	13.5	35.0							
Gain or loss		- 1.0	0.71	-0.71	- 1.0	-1.2	-0.2	+ 3.4	1.64	-1.19	+0.1	17.0	89.5	340.5	51.6
1944															
March 1	9.5	6.4			9.3	10.5	13.0	21.7							
April 1		5.6			10.2	10.6	12.2	21.7							
Gain or loss		-0.8	0.34	-1.08	+ 0.9	+0.1	- 0.8	0	1.34	-1.49	- 5.0	9.2	73.6	92.0	13.9
1945															
March 1	6.9	8.1			10.5	10.3	12.4	19.1							
April 1	10.8	12.1			17.4	15.0	17.6	23.5							
Gain or loss	+3.9	+4.0	2.28	+0.86	+6.9	+4.7	+5.2	+4.4	4.53	+1.70	-4.8	12.6	115.6 (Inc.)	136.5	20.7

*Relationship of March normal to March-July normal is 15.2%

CHANGE IN SNOW COVER AT LOW LEVELS DURING MARCH 1942-1945
(Inches water)

	Northern Feeders				Southern Feeders		
	Fry Canyon (6,800 ft.)	Gold Creek (6,600 ft.)	Tromewan Ranch (5,775 ft.)	Taylor Canyon (5,200 ft.)	Harrison Pass (6,600 ft.)	Dry Creek (6,500 ft.)	Ryan Ranch (5,775 ft.)
1942							
March 1	10.5	8.1	4.1	8.5	6.5	7.6	4.3
April 1	9.0	7.7	0.5	6.4	5.6	8.4	0.9
Gain or loss	-1.5	-0.4	-3.6	-2.1	-0.9	+0.8	-3.4
1943							
March 1	10.7	10.9	2.3	4.4	2.3+	4.8	0.8
April 1	8.7	8.9	0	0	0	0	0
Gain or loss	-2.0	-2.0	-2.3+	-4.4+	-2.3+	-4.8+	-0.8+
1944							
March 1	8.2	4.0	2.9	4.2	5.0	5.9	4.0
April 1	6.5	0	0	0	0		
Gain or loss	-1.7	-4.0+	-2.9+	- 4.2+	-5.0		
1945							
March 1	8.6	6.3	2.2	7.6	5.9	5.8	3.1
April 1	12.7	9.1	0	9.4	7.6	10.5	3.1
Gain or loss	+4.1	+2.8	-2.2+	+1.8	+1.7	+ 4.7	0

Average gain or loss in snow cover: 1942.....-1.6 in.; 1943.....-2.7 in.;
1944.....-3.2 in.; 1945.....+1.8 in.

RUNOFF MARCH-SEPTEMBER
Monthly and Totals
Humboldt Basin 1944
Acre Feet

	March	April	May	June	July	Aug.-Sept.	March-July	March-September
				1. Upper Humboldt				
Humboldt at Palisade	30,210	40,940	57,940	90,870	39,060	4,400	259,020	263,420
Mary's River below Hot Springs Creek near Deeth	2,730	5,720	10,260	10,340	2,440	140	31,490	31,630
North Fork at Devil's Gate near Halleck	7,010	7,530	5,430	8,440	1,480	660	29,890	30,550
Lamoille Creek & McDermitt Ditch near Lamoille	300	650	8,630	12,390	7,230	1,460	29,200	30,660
South Fork near Elko	4,970	14,550	28,850	42,110	15,430	1,210	105,910	107,120
Total of above 4 Feeders							196,490	199,960
Humboldt near Carlin	24,370	35,980	54,090	88,250	37,270	2,750	239,960	242,710
				2. Little Humboldt				
Little Humboldt at Chimney Dam Site	620	2,700	2,550	1,550	340	90	7,760	7,850
Little Humboldt near Paradise Valley	850	1,540	2,260	1,460	670	850	6,780	7,630
Martin Creek near Paradise Valley	1,060	3,460	5,420	3,070	920	670	13,930	14,600

COMPARISON OF SNOW SURVEYS, FORECASTS, AND STREAM FLOW
HUMBOLDT RIVER BASIN
1944

	Snow Surveys Percent of Normal		March-July Streamflow Forecasted (Probable)		Actual Results	
	March 1	April 1	% of Normal	Acre Ft.	Acre Ft.	% of Normal
Humboldt at Palisade	77.5		(215,000) 94	202,100	259,020	120.5**
Marys River below Hot Springs Creek near Deeth	64.3		65 to 90		31,490	
North Fork at Devils Gate near Halleck	64.3		65 to 90		29,890	
* Lamoille Creek & McDermitts Ditch near Lamoille	83.4		(26,040) 83	21,613	29,200	112.1**
* South Fork at Boltons	86.3		(44,000) 86	37,840		
South Fork near Elko				(81,910) Norm.	105,910	129.3**
Sum of above 4 Tributaries, exclusive of Boltons					196,490	
Humboldt near Carlin					239,960	
Little Humboldt at Chimney Dam Site					7,760	
Little Humboldt near Paradise Valley					6,780	
Martin Creek near Paradise Valley	54.5	97	(20,320) 97	19,700	13,950	68.6***

*Forecast and R.O. period is for Apr.-July

**The flow was increased 20% of normal by heavy summer precipitation.
For the Humboldt at Palisade the forecast was increased to 94% because of the above-normal water table.

**The March 1 snow survey was only 54.5% of normal, which casts doubt on the high percentage April 1.

II. EASTERN NEVADA

In Steptoe Valley the snow cover is slightly better on Spril 1 this year than last, and the precipitation for November-March is 104.0 percent.

In Baker Creek on the basis of 1944 the snow cover is 119.2 percent.

There are no normals of snow cover or runoff.

EASTERN NEVADA

APRIL 1 SNOW SURVEY DATA

Temperature Departure March Ely (6,257 ft.) -4.9°F (Mean 27.6°F) Mean temperature above freezing 8.8°F

Mean temperature Lehman Caves Nat. Mon. (7,200 ft.) above freezing

	Elevation feet	Date	Snow depth inches	Density percent	Water equivalent inches	Normal water equivalent Mar. 1 ins.	Percentage of Mar. 1 normal	Precipitation (U.S.W.B.) March Ely (6,257 ft.) Normal 1.19 in. Lehman Caves Nat. Mon. (7,200 ft.) Normal 1.12 in.; Ely 2.01 in.; 168.9% Lehman Caves 2.80 in.; 280%
Steptoe Valley								
Murray Summit	7,500	Apr. 4	15.9	32.7	5.2			
Baker Creek								
Baker Creek #3	9,230	Mar. 31	78.6	33.6	26.4			
Baker Creek #2	8,950	Mar. 31	69.5	33.2	23.1			
Baker Creek #1	7,950	Mar. 31	34.4	29.4	10.1			

CHANGE IN SNOW COVER DURING MARCH 1942-1945

(Inches of water)

	Steptoe Valley Murray Summit (7,500 ft.)	Precipitation (U.S.W.B.) Ely (6,257 ft.) Inches and percentage of normal (Normal 1.19 in.)	Baker Creek No. 3 (9,250 ft.)	Baker Creek Baker Creek No. 2 (8,950 ft.)	Baker Creek Baker Creek No. 1 (7,950 ft.)	Precipitation (U.S.W.B.) Lehman Caves Nat. Mon. (7,200 ft.) Ins. and percentage of normal (Normal 1.12 in.
1942						
March 1	3.7	1.03 in.;	21.3	15.6	5.3	
April 1	2.5	86.6%		17.6	2.9	2.42
Gain or loss	-1.2			+2.0	-2.4	216.1%
1943						
March 1	5.0		13.0	12.8	6.0	
April 1	0	0.44 in.;	16.9	16.2	5.6	1.15
Gain or loss	-5.0+	37.0%	+3.9	+3.4	-0.4	102.7%
1944						
March 1	5.2	0.89 in.;		17.0	10.1	
April 1	5.3	74.8%	22.5	20.5	7.2	2.25
Gain or loss	+0.1			+3.5	-2.9	200.9%
1945						
March 1	4.6	2.01 in.;		14.5	7.1	
April 1	5.2	168.9%	26.4	23.1	10.1	2.80 in. 250%
Gain or loss	+ 0.6			+8.6	+3.0	

III. SOUTHERN NEVADA

The snow cover April 1 on Mount Charleston is somewhat less than for 1942, considered a normal year. However, it is 157.6 percent of 1944. The precipitation at the Las Vegas Air Port for November-March was 127.4 percent of normal.

Ranger Hoffman has laid out the snow course on the west side of Charleston Mountain in Clark Canyon at 9,000 ft. as an index of water possibility in Pahrump Valley.

SOUTHERN NEVADA
APRIL 1 SNOW SURVEY DATA

Temperature departure March, Charleston R. S. (Mean 29.5°F)
Mean temperature above freezing 11.5°F.

Charleston Mt.	Elevation	Date	Snow depth inches	Density percent	Water equivalent ins.	Normal water equivalent ins. March 1	Percentage of Mar. 1 normal	Precipitation (U.S.W.B.) inches and percentage March normal.
Kyle Canyon	8,200	Mar.30	48.6	32.3	15.7			Charleston R.S. 4.00 in.
Rainbow Canyon	7,800	Mar.30	47.9	33.4	16.0			
Lee Canyon	9,000	Mar.28	49.2	30.9	15.2			Las Vegas A.P. 1.58 in.
Lee Canyon	8,300	Mar.27	51.1	30.5	15.6			(Normal 0.34 in.);
Clark Canyon	9,000	Mar.28	46.3	30.9	14.3			464.7%

CHANGE IN SNOW COVER DURING MARCH 1942-1945
Charleston Mountains

	Kyle Canyon (8,200 ft.)	Rainbow Canyon (7,800 ft.)	Lee Canyon (9,000 ft.)	Lee Canyon (8,300 ft.)	Clark Canyon (9,000 ft.)	Precipitation (U.S.W.B.) Inches March Charleston R.S. (7,165 ft.)
1942						
March 1	8.8	10.5	9.9	7.8		1.86
April 1	9.5	11.0	15.2	11.3		
Gain or loss	+0.7	+ 0.5	+5.3	+3.5		
1943						
March 1	15.7	16.7	17.4	13.9		Las Vegas Airport 153.0%
April 1		15.0		7.3		
Gain or loss		-1.7		-6.6		
1944						
March 1	12.9	12.2	8.9	9.3		Charleston R.S. 0.43
April 1	13.0	11.2	7.7	7.6		Las Vegas A.P. 0.06 in. 17.6%
Gain or loss	+0.1	-1.0	-1.2	-1.7		
1945						
March 1	9.9	9.5	13.3	13.6		
April 1	15.7	16.0	15.2	15.6	14.3	Charleston R.S. 4.00 Las Vegas A.P. 1.58 in; 464.7%
Gain or loss	+5.8	+6.5	+1.9	+2.0		
Average 4 years (1941-44)	+0.1	-0.8	+1.4	-1.2		

IV. WILDLIFE REFUGES

1. Sheldon Antelope Refuge

The snow cover for April 1 is the best of record, i.e. since 1941, though for March 1 the record is poorest. The low temperature and high precipitation are the cause.

The course at Mahogany Mountain could not be measured this season because of lack of personnel. By horseback it would have required 5 days to make the trip from headquarters.

2. Ruby Lake Wildlife Refuge

The snow cover for April 1 is likewise the best of record, and for March 1 is similar to that of 1942 and 1943. Both courses are again being surveyed regularly.

WILDLIFE REFUGES

APRIL 1 SNOW SURVEY DATA

Sheldon National Antelope Refuge (Northern Washoe County)

Temperature Departure March Sheldon -4.0°F (Mean 27.6); Mean above freezing 6.2°F (Normal 10.2°F)

Elevation feet	Date	Snow depth inches	Density percent	Water equivalent ins.	Normal water equivalent Mar. 1	Percentage of Mar. 1 normal	Precipitation (U.S.W.B.) inches and percentage of normal March
Bald Mt. 6,720	Apr. 1	15.9	32.1	5.1			
Mahogany Mt. 5,680							Sheldon (6,500 ft.) (Normal 1.13in.) 1.00 in.; 88.5%

Ruby Lake National Wildlife Refuge, (Southern Elko County)
Temperature departure March, Elko -4.8°F (Mean [illegible]°F)
Mean temp. above freezing 12.6°F (Normal 10.1°F)

Hagar Canyon 8,500	Apr. 3	73.9	31.7	23.4			Arthur (6,500 ft. (Norm. 2.24 in.) 2.73 in.; 121.9%
Cave Creek 7,000	Apr. 3	58.7	34.1	20.0			Ruby Lake 1.47 in.

GAIN OR LOSS OF SNOW COVER DURING MARCH 1942-1945
(Inches of Water)

	Sheldon Refuge Bald Mountain Creek (6,720 ft.)	Mahogany Mt. (5,680 ft.)	Precipitation (U.S.W.B.) Inches and percent of normal Sheldon (6,500 ft.) (Norm. 1.13 in.)	Ruby Lake Refuge Hagar Canyon	Ruby Lake Refuge Cave Creek	Precipitation (U.S.W.B.) Inches and percent of normal Ruby Lake
1942						
March 1	6.2	3.0	0.25 in.;	21.0	16.2	1.18 in.
April 1	4.5	0	22.1%	23.5	16.6	
Gain or loss	-1.7	-3.0+		+ 2.5	+0.4	
1943						
March 1	7.7	0.7		19.1	14.6	
April 1	4.3	0	0.71 in.;	17.1	8.8	1.48 in.
Gain or loss	-3.4	-0.7+	62.8%	-2.0	-5.8	Arthur 11.6%
1944						
March 1	3.4	2.3				
April 1	0	0	0.65 in.;			Arthur 0.56 in.; 25.0%
Gain or loss	-3.4+	-2.3+	57.5%			
1945						
March 1	3.3	Lack of manpower	1.00 in.;	17.0	15.5	1.47 in.
April 1	5.1		88.5%	23.4	20.0	Arthur 121.9%
Gain or loss	+1.8			+6.4	+4.5	

The following is a list of needs for next snow survey season:

A motor sled should be provided for the Jarbidge district where the danger of avalanches has prevented the taking of snow surveys at Marys River course for the second season. With a snow sled it would be possible to go around the avalanche area but by ski it is a much too strenuous trip. A new shelter cabin should also be built in this district.

Shelter cabins are also needed on Trout Creek, Baker Creek and Mt. Charleston where it is practically impossible to complete the survey in one day and where in some cases a return trip has to be made.

In all of these stormeswept areas shelter cabins are imparative and should be provided with radio communication.

Seasonal Snow Survey and Forecast of Stream Flow — April, 1945
Nevada Co-operative Snow Surveys

PART I—CENTRAL SIERRA QUADRANGLE

Including the Truckee, Tahoe, Carson and East and West Walker Basins of the Eastern Slope

CO-OPEERATION

The organizations co-operating in the surveys of this region are: The Nevada Co-operative Snow Surveys, including the State of Nevada, through the State Engineer's office, the Truckee-Carson Irrigation District, the Washoe County Water Conservation District and the Sierra Pacific Power Co.; the California Co-operative Snow Surveys headed by the Division of Water Resources of the Department of Public Works at Sacramento and including the Pacific Gas & Electric Co. and the Nevada Irrigation District, whose employees make the surveys of several of the courses used in this forecast; the U. S. Forest Service; and the Division of Irrigation of the U. S. Soil Conservation Service. The Division of Irrigation is the organization which is developing and co-ordinating the snow surveys throughout the western states. All of the above organizations contribute financially to the work.

The U. S. Weather Bureau and the Nevada Agricultural Experiment Station at the University of Nevada are also co-operating in various ways.

PART II. Humboldt Basin and Miscellaneous is prepared under the direction of Dr. J. E. Church of the Nevada Agricultural Experiment Station, University of Nevada.

REVIEW OF LAST YEAR

The year 1944 was lower in water supply than any other year since 1939 but not as low as that year. In the Central Sierra 1943-44 winter precipitation was much below normal and the April 1 snow surveys likewise showed low water equivalent, most of the courses ranging between 60% and 80% of normal. Some of the low level and most of the high level Carson Range courses averaged relatively better than the high level main Sierra Range courses. This is explained by the fact that several fairly good snow storms came from the east giving actually greater precipitation on the Carson Range than on the main Sierra Range.

As will be seen from the following table the actual results checked the forecasts closely except in the case of the East Walker at Bridgeport Dam where the runoff was above the forecast by 16.6% of normal. However, the excess of 12,080 acre feet would be only 3.7% of normal had it occurred on the Truckee River.

1944 RESULTS**

BASIN OR STREAM	Normals	1944 Forecast % of Normal	1944 Forecast Amount	Actual Results Amount	Actual Results % of Normal
			Feet	Feet	
*Lake Tahoe—Rise April 1 to High Water	1.68	53.6	.90	.91	54.2
*Maximum Elevation		June 15	6227.70	6227.71	July 6
			Acre Feet	Acre Feet	
Truckee River—Natural Flow at Farad Exclusive of Tahoe	325,700	59.9	195,000	178,990	55.0
Carson River at Ft. Churchill	230,000	39.1	90,000	96,740	42.1
West Walker near Coleville	191,200	57.5	110,000	113,420	59.3
East Walker below Bridgeport Dam	73,000	45.2	33,000	45,080	61.8

*Assuming gates closed—no outflow.
**The runoff period is April-July, except for the East Walker where it is April-August.

OUTLOOK FOR 1945

Unusually heavy precipitation last November in the form of snow in the mountains and rain in lower altitudes gave promise of a good year but later results were not so good, so on March 1 the indications were for another quite low year. It is a common occurrence for most of the low level courses to lose more water content in March through melting than they gain by precipitation but this year March came to the rescue with sufficient precipitation to change the picture and insure a much better water supply than last year.

See the last page for tabulation of Forecasts.

TRUCKEE RIVER

The natural flow of the Truckee at Farad exclusive of Tahoe and corrected for storage is expected to be about 260,000 acre feet for April-July whereas last year it was 179,000 acre feet.

The storage in Boca reservoir on April 1 was 4,260 acre feet with a capacity of 40,900. Snow surveys indicate more than enough water to assure a full reservoir by the end of June after passing considerable through the reservoir before that date.

LAKE TAHOE

Tahoe was at elevation 6226.65 on April 1 and assuming outlet gates kept closed it should rise about 1.45 ft. reaching a maximum of about 6228.10 near July 10. This is one foot below the specified maximum limit of 6229.10 and a gain of nearly 5 inches above the maximum reached last summer. The gain in storage over last year will be about 48,000 acre feet if the forecast is realized.

CARSON RIVER

The estimate for Carson River discharge at Ft. Churchill is 152,000 acre feet for April-July or 66.1 percent of normal. This is much better than last year but lower in percent of normal than for other basins because of extensive diversions for irrigation in Carson Valley and elsewhere, leaving a smaller proportion of the total flow to reach the gaging station.

Lahonton Reservoir contained 270,460 acre feet storage on April 1, its capacity being 286,000 acre feet.

WEST WALKER

The West Walker is estimated to yield 162,000 acre feet for the April-July period at the gaging station above Coleville and below the junction with the east fork. This is 84.7% of normal or 25% of normal better than last year.

Topaz reservoir with a capacity of about 60,000 acre feet contained 49,200 acre feet of storage on April 1.

EAST WALKER

The East Walker, which has discharged considerably more than forecast for several years, is estimated to supply 66,000 acre feet or 90.4% of normal at Bridgeport Dam for the April-August period this year.

The Bridgeport reservoir contained 43,500 acre feet storage on April 1, which is above the rated capacity of 42,500 acre feet.

1945
PROGRESS SNOW SURVEYS DURING THE WINTER

Basin	Snow Course	Altitude of Snow Course	1945 Date of Snow Survey	Depth of Snow Inches	Density % Water	Water Equivalent Inches	April 1 Normal Water Equivalent	% of April 1 Norm	Year 1944 % of April 1 Normal	Year 1944 Date
South Yuba and Crest	Furnace Flat	6600	1/30	50.3	36.4	18.3	(59)	31.0	38.0	2/9
			2/26	83.9	39.3	33.0	(59)	55.9	57.8	3/2
	Fordyce Lake	6500	1/30	42.0	38.1	16.0	(51)	31.4	40.6	2/7
			2/27	75.7	35.4	26.8	(51)	52.5	74.5	3/5
	Soda Springs	6750	2/4	64.5	29.8	19.3	(42)	46.0	29.0	2/1
			2/28	68.1	35.0	23.8	(42)	56.7	65.0	3/1
	Donner Summit	6900	2/3	69.8	32.1	22.4	47.8	46.9	29.1	2/1
			2/28	75.8	32.8	24.9	47.8	52.1	57.3	3/1
	Ward Creek	7000	3/4	95.3	33.3	31.7	52.7	60.2	51.8	2/26
Truckee	Independence Lake	8400	3/10	88.8	34.7	30.8	(47)	65.5	78.9	2/27
	Independence Camp	7000	3/9	53.0	32.3	17.1	(26.5)	64.5	55.8	2/27
	Sage Hen Creek	6500	2/11	36.9	33.6	12.4	(22)	56.4	28.2	1/29
			3/11	44.1	32.2	14.2	(22)	64.5	57.3	2/26
	Truckee No. 2	6400	3/4	42.9	29.6	12.7	(20)	63.5	56.0	2/27
	Donner Lake	5950	2/3	41.8	27.3	11.4	New Course			
			3/1	45.3	32.9	14.9	New Course		23.1 W.Eq.	3/5
	Truckee R. S.	6000	3/1	29.8	33.9	10.1	New Course			
Tahoe	Tahoe City	6250	2/4	18.8	25.0	4.7	15.9	29.6	39.6	1/31
			3/1	17.8	32.6	5.8	15.9	36.5	71.7	3/2
	Marlette Lake	8000	2/4	59.0	30.0	17.7	27.8	63.7	44.6	2/1
			3/1	69.5	30.9	21.5	27.8	77.3	77.0	3/2
	Daggetts Pass	7350	3/3	42.7	25.8	11.0	16.3	67.5	65.6	2/26
	Richardsons No. 1	6500	3/3	21.7	20.3	4.4	(13)	33.8	61.5	2/27
	Richardsons No. 2	6500	3/3	37.7	28.1	10.6	No Norm			
	Lake Lucille*	8400	3/5			(53.3)	61.2	(87.1)		
	Echo Summit	7500	1/31	54.5	33.8	18.4	(40)	46.0	39.0	1/30
			3/1	90.7	31.2	28.3	(40)	70.8	57.5	2/28
Carson	Blue Lakes	8000	2/4	92.3	29.9	27.6	48.1	57.4	29.3	2/1
			3/1	94.8	33.7	31.9	48.1	66.3	54.7	3/2
	Carson Pass	8600	1/25	51.0	36.3	18.5	(48)	38.5	34.0	2/6
			2/23	84.3	40.0	33.7	(48)	70.2	46.7	2/27
Mono	Tioga Pass	9900	2/26	69.1	39.7	27.4	(31)	88.4	55.8	2/26

* Impossible to complete more than two samples—results estimated from those two samples.

APRIL 1, 1945, SNOW SURVEY DATA

Snow Survey Stations	Elevation of Snow Course Feet	Date of 1945 Snow Survey	Depth of Snow Inches	Density of Snow % Water	Water Equivalent Inches	Normal Water Equivalent April 1 Inches	1945 Seasonal % of Normal	Last Year % of Normal (1944)
TRUCKEE BASIN								
Crest and South Yuba								
Furnace Flat	6600	3/28	120.3	40.2	48.4	(59)	82.0	64.9
Fordyce Lake	6500	3/29	109.0	36.4	39.7	(51)	77.8	69.0
Soda Springs	6750	3/31	89.5	40.6	36.3	(42)	86.4	62.6
Donner Summit	6900	3/31	94.7	40.2	38.1	47.8	79.7	63.6
Ward Creek	7000	4/14	109.8	42.5	46.7	52.7	88.6	58.4
Little Truckee								
xWebber Peak	8000	3/24	98.3	37.4	36.8	56.9	64.7	58.0
Webber Lake	7000	3/24	83.0	36.0	29.9	38.1	78.5	71.4
Independence Lake	7000	4/7	103.0	38.2	39.3	(47)	83.6	67.0
Independence Camp	7000	4/6	54.2	38.6	20.9	(26.5)	78.9	75.8
Independence Creek	6300	4/9	42.4	34.2	14.5	(18)	80.6	73.9
Sage Hen Creek	6500	4/10	53.7	33.9	18.2	(22)	82.7	72.7
Eastern Outposts								
Granite Peak	8200	No Survey				24.7		78.1
Big Meadow	8800	No Survey				28.1		79.4
Mt. Rose	10,000	4/1	101.5	40.2	40.8	(45)	90.7	71.1
Lower Levels								
Boca No. 2	5900	3/31	13.2	41.7	5.5	(9)	61.1	64.4
Truckee No. 2	6400	4/1	45.4	34.4	15.6	(20)	78.0	73.0
*Donner Lake	5950	3/31	60.2	37.0	22.3			
*Truckee Ranger Station	6000	4/1	33.6	33.9	11.4			
Tahoe City	6250	4/1	25.7	34.2	8.8	15.9	55.3	71.1
TAHOE BASIN								
Crest—Main Sierra								
Ward Creek	7000	4/14	109.8	42.5	46.7	51.2	91.2	60.2
Rubicon Peak No. 1	8100	No Survey				48.9		61.3
Rubicon Peak No. 2	7500	No Survey				(36)		64.7
Lake Lucile	8400	4/3	148.9	38.4	57.2	61.2	93.5	63.7
Echo Summit	7500	3/31	106.0	38.0	40.3	(40)	100.8	73.0
Eastern Outposts								
Mt. Rose	10,000	4/1	101.5	40.2	40.8	(45)	90.7	71.1
Marlette Lake	8000	4/1	74.2	36.5	27.1	27.8	97.5	87.4
Hagan's Meadow (Freel Peak)	8000	4/1	56.8	32.4	18.4	21.2	86.8	63.2
Lower Levels								
Tahoe City	6250	4/1	25.7	34.2	8.8	15.9	55.3	71.1
Rubicon Peak No. 3	6700	No Survey				(30)		60.7
Richardsons	6500	3/31	31.3	26.2	8.2	(13)	63.1	68.5
*Richardsons No. 2	6500	3/31	50.0	33.0	16.5			15.7 W.Eq.
Upper Truckee	6400	4/1	27.3	38.5	10.5	(11)	95.5	60.0
Freel Bench	7300	4/1	34.4	30.6	10.5	(15)	70.0	44.7
Daggett's Pass	7350	3/30	45.2	30.8	13.9	16.3	85.3	83.4
Glenbrook No. 2	6900	3/31	50.3	29.8	15.0	(20)	75.0	74.0
WASHOE VALLEY								
Marlette Lake	8000	4/1	74.2	36.5	27.1	27.8	97.5	87.4
*Little Valley	6300	3/30	28.9	36.7	10.6			11.6 W.Eq.
CARSON BASIN								
Crest—West Carson								
Carson Pass	8600	3/30	113.0	35.7	403.	(48)	84.0	63.3
Blue Lakes	8000	3/31	113.6	35.8	40.7	48.1	84.6	59.3
East Carson								
Poison Flat	7900	3/31	59.1	31.3	18.5	(18)	102.8	82.2
WALKER BASIN								
West Walker								
Sonora Pass	8800	4/2	79.7	34.3	27.3	(31)	88.1	61.9
Leavitt Meadows	7200	4/1	34.0	34.4	11.7	(16)	73.1	75.0
Willow Flat	8250	No Survey				(16)		
East Walker								
Center Mountain	9400	4/11	132.8	34.6	46.0	45.7	100.7	65.0
Buckeye Forks	8500	4/10	73.5	29.4	21.6	26.0	83.1	65.8
Buckeye Roughs	7900	4/10	68.0	29.7	20.2	25.9	78.0	68.7
Dunderberg Peak	8400	4/4	62.0	35.8	22.2	(45)	49.3	37.6
MONO BASIN								
Crest								
Tioga Pass	9900	3/28	96.1	36.0	34.6	(31)	111.6	69.7

x Adjusted Values—Only 60% of course surveyed as snow surveyors encountered two bear cubs and their mother so left in a hurry.
* New Courses—Not measured long enough to determine normals.

FORECAST — CENTRAL SIERRA — EASTERN SLOPE

APRIL-JULY, 1945

BASIN OR STREAM	Normals Feet	SEASONAL FORECAST Probable % of Normal	Probable Amount Feet	Possible Minimum % of Normal	Possible Minimum Amount Feet
*Rise of Tahoe—April 1 to high water	1.68	86.3	1.45	77.4	1.30
*Maximum Elevation of Tahoe (about July 10)			6228.10		6227.95
	Acre Feet		Acre Feet		Acre Feet
xTruckee Exclusive of Tahoe (Natural Flow)	325,700	79.8	260,000	73.7	240,000
Carson River at Fort Churchill	230,000	66.1	152,000	60.9	140,000
West Walker Near Coleville	191,200	84.7	162,000	78.5	150,000
†East Walker near Bridgeport Dam	73,000	90.4	66,000	82.2	60,000

* Assuming gates kept closed—no outflow.

x Corrected for changes in Little Truckee Reservoir storage.

† The forecast period for the East Walker is April-August because of late melting of snow in high altitudes and northeastern slopes of the Saw Tooth Range west of Bridgeport.

Distribution of April-July Runoff in Typical Streams—Per Cent of Total April-July Runoff

	Truckee at Farad Excl. of Tahoe	Carson at Clifton	West Walker at Coleville
April	32	19	11
May	38	36	29
June	23	34	37
July	7	11	23
April-July	100.0	100.0	100.0

A retardation in the earlier months of the series assures an increase in the later months and vice versa.

Table A, below, shows what Lake Tahoe is able to supply at various elevations with gates wide open. Table B, below, shows the need of drawing from the lake or other storage during the summer and fall to maintain a flow of 500 cubic feet per second at Farad.

A. Draft Possible at Various Elevations:

Elev. (Ft.)	Draft (C.F.S.)	Elev. (Ft.)	Draft (C.F.S.)
6223.0	0	6225.5	520
6223.5	24	6226.0	730
6224.0	88	6227.0	1160
6224.5	183	6228.0	1600
6225.0	325	6229.0	2060

One foot depth on Tahoe is equivalent to 123,000 acre feet.

B. Natural Flow of Truckee River at Farad, Exclusive of Tahoe (Much Affected by Rains) August-October:

	Normal Acre Feet	Second Feet
August	7485	122
September	5800	98
October	6545	106

WINTER PRECIPITATION

*Typical Progress through winter for Central Sierra Region:

Dec.-March Date	Dec.-March % Due	Nov.-March % Due	Nov.-March Date
Dec. 1	0	12	Dec. 1
Jan. 1	21	31	Jan. 1
Feb. 1	50	57	Feb. 1
Mar. 1	76	79	Mar. 1
Apr. 1	100	100	Apr. 1

†Seasonal Progress

Tahoe City
Nov.-March, 1944-45

Date	% of Seasonal	Actual Inches	% of Normal Due
Dec. 1	30	7.65	262
Jan. 1	45	11.35	152
Feb. 1	49	12.37	91
Mar. 1	84	21.05	96
Aprl 1	100	25.09	101

*Based on U.S.W.B. Revised Normals, % Due being averages for nine U.S.W.B. Stations in Central Sierra.

†Percent of Normal Due based on U.S.W.B. Revised Normals for Tahoe City.

Nov.-March normal.....24.81

Dec.-March normal.....21.89

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Reno, Nevada, April 25, 1945.

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preliminary

ESTIMATE OF PROBABLE 1945 WATER SUPPLY BASED ON MARCH SNOW SURVEYS AND OTHER INDICATIONS BY THE NEVADA COOPERATIVE SNOW SURVEYS

I. Eastern Slope Central Sierra

For areas served by storage reservoirs the outlook is for an adequate supply for irrigation this year. For regions without storage the supply will probably be somewhat deficient unless the precipitation from now on is unusually heavy. The Blue Lakes March 1 snow survey is better than last year at the same date and even better than the April 1 survey last year so the Carson River runoff will probably be better than last year.

The following table shows the status of reservoirs in this territory.

Reservoir	Storage March 1	Capacity
Boca, on Little Truckee	13,840 A. F.	40,000 A. F.
Lahontan, on lower Carson	237,700 A. F.	286,000 A. F.
Topaz on West Walker	41,470 A. F.	60,000 A. F.
Bridgeport on East Walker	38,000 A. F.	42,500 A. F.

Lake Tahoe was at elevation 6226.42 on March 1. Its rim is 6223.0 and the agreed maximum is 6229.1.

Heavy precipitation in November 1944 left a good snow blanket in high altitudes above 7,500 or 8,000 ft. altitude but from 7,000 ft. down some of that November and considerable of the later precipitation was rain. As a result the low altitude snow surveys are below 40% of April 1 normal while the higher level courses are between 50% and 60% for most of those courses from 6,500 to 7,000 ft. elevation and from 65 to 77% of April 1 normal for courses above 7,000 ft. elevation. At Lake Lucile course, south-

west of Tahoe and at 8,400 altitude, due to adverse conditions only two samples were obtained and estimates made on the basis of those samples indicate a probable water equivalent of more than 80% of April 1 normal.

The expectancy for March is a net loss in snow water equivalent of several percent for low level courses and a gain of 5% to 10% for high level courses.

Forecast Committee
Nevada Cooperative Snow Surveys
By H. P. Boardman
Chairman

The following is a Preview of the remainder of the State for which a bulletin with complete data is being prepared and will soon be sent to the press and others interested.

II. Northern Nevada

In northern as well as western Nevada the precipitation has exceeded the snow cover and on the southern feeders of the Upper Humboldt and in the Little Humboldt basin is far above normal.

The wells in the Humboldt Valley though lower than in 1942, 1943, 1944 are considerably higher than in 1941. The minimum level of the wells in Lamoille Valley is higher than at any time since 1941. Therefore the runoff should be equivalent to the snow cover or 10 to 15 percent of normal more.

The data of snow cover, runoff, and storage are as follows:

1. Upper Humboldt

	Snow Cover Mch. 1 (Pct. of normal)	Precip. Nov.-Feb. (Pct. of normal)	
Northern Feeders	77.6	81.0	Incomplete
Southern Feeders	88.0	139.0	"
Average Upper Humboldt	82.6	110.0	"

2. Little Humboldt

81.1	Incomplete	153.4

3. Lower Humboldt

Rye Patch Reservoir above Lovelock is full, a month early, at its capacity of 178,100 A.F.

Pitt-Taylor Reservoirs now have 11,000 A.F. stored in a usable capacity of 37,000 A.F.

Forecast

The percentages of 77.6 and 88.0 on the northern and southern feeders of the Upper Humboldt and 81.1 on the Little Humboldt should be realized in their respective basins.

At Palisade, whose measurements are affected by the water table in Lamoille and Humboldt Valleys, the average flow of 82.6 percent for the joint feeders should even be exceeded by 10 to 15 percent of normal if the rains during runoff are normal.

The normal flow at Palisade March-July is 215,000 A.F. or adjusted median is 203,300 A.F. On the basis of 93 percent, a run-off of 200,000 (189,000 A.F.) should be realized, which approximates the normal need.

At 81 percent of normal, Martin Creek in the Little Humboldt should flow 16,500 A.F.

III. Central Nevada

Reese River Basin

The snow cover in the Reese River Basin appears to be heavier possibly by 20 percent than in 1944 and the precipitation at Austin (Nov.-Feb.) is 103.3 percent or 5 percent of normal greater than last year.

IV. Eastern Nevada

Steptoe Valley and Baker Creek Basin

The Nov.-Feb. precipitation at Ely is 82.2 percent of normal or 17 percent of normal better than last year. But the snow cover is 12 percent less than a year ago.

V. Southern Nevada

Charleston Mountain

The precipitation at Las Vegas Airport for Nov.-Feb. has been

52.2 percent of normal, but the snow cover shows an average increase of 8 percent over last year. Another snow course is planned for the western face of the mountain above Pahrump Valley.

VI. Wildlife Refuges

1. Sheldon Antelope Refuge

The snow cover at Bald Mountain is practically identical in amount with last year, though packed to half the depth. The precipitation for Nov-March was 111.6 percent of normal.

2. Ruby Lake Wildlife Refuge.

The water content of the snow cover is approximately the same as in 1943 and the precipitation (Nov.-Feb.) as reported from Arthur is 95.3 percent of normal.

Unusual effort was made by organizations and snow surveyors to obtain the measurements the present year despite the heavy storm at the beginning of March.

Nevada Agricultural Experiment Station
By J. E. Churchand H. P. Boardman